REMARKS

The present application was filed on October 3, 2003 with 33 claims. A previous Response added claims 34-36. The Examiner issued a Restriction Requirement, and the Applicants in response elected the claims of Group I (i.e., claims 1-13, 25-34 and 36) and canceled the claims of Group II (i.e., claims 14-24 and 35). With another previous response, Applicants amended claims 4, 7, 13, and 29 and added claims 37 and 38.

With the present response, Applicants amend claims 1-3, 25, and 38 and add claims 39-41. The amendments to claims 2, 3, and 38 are made for clarification and not patentability purposes. The amendment to claim 1 is supported, e.g., by FIGS. 4, 5C, 5D, 6, and 7. The amendments to claims 2 and 3 are supported, e.g., by the original claims, FIG. 4, and paragraph [0032]. The amendment to claim 25 is supported, e.g., at paragraph [0050]. The amendment to claim 38 is supported, e.g., by paragraph [0040]. New claim 39 is supported, e.g., by paragraph [0037] and new claim 40 is supported, e.g., by originally filed claim 9. New claim 41 is supported, e.g., by paragraphs [0034] and [0045]. Claims 1-13, 25-34, and 36-41 are pending.

In the outstanding Office Action, the Examiner (1) rejected claims 1, 2, 4, 9, 34, and 37-38 under 35 U.S.C. §102(b) as being anticipated by Ashby et al., U.S. Patent No. 5,463,649; (2) rejected claims 3, 5-8, and 10 under 35 U.S.C. §103(a) as being unpatentable over Ashby in view of Nettleton et al. (Applied Optics, 20 May 2000); (3) rejected claims 11, 25, 26, 30-32, and 36 under 35 U.S.C. §103(a) as being unpatentable over Ashby in view of Langhans et al., U.S. Patent No. 6,788,723; and (4) objected to claims 12, 13, and 27-29, but indicated that these claims would be allowable if rewritten in independent form including all limitations of their respective independent claims and any intervening claims.

Rejection of claims 1, 2, 4, 9, 34, and 37-38 in part (1)

Applicants have amended independent claim 1 to recite in part "A solid-state laser comprising a freestanding laser resonator composite structure comprised of a laser gain

medium optically contacting a passive Q-switch" (emphasis added), as supported, e.g., by FIGS. 4, 5C, 5D, 6, and 7. Applicants' attorney discussed this amendment with the Examiner in a teleconference on May 22. Applicants respectfully submit that freestanding is supported by the drawings and means, e.g., "unattached to a supporting unit or background" (Random House Webster's Collegiate Dictionary, 2nd ed., 1997, page 517). Ashby by contrast discloses a laser built on and part of a semiconductor substrate. See, e.g., FIGS. 2, 3, and 4 of Ashby and col. 2, lines 40-54 of Ashby.

As Ashby does not disclose a freestanding laser resonator composite structure comprised of a laser gain medium optically contacting a passive Q-switch as recited in claim 1, claim 1 is patentable over Ashby. As independent claim 1 is patentable, dependent claims 2, 4, 9, 34, 37, and 38 are also patentable for at least the reasons given for independent claim 1. Applicants request the §102 rejection to claims 1, 2, 4, 9, 34, 37, and 38 be withdrawn

Rejections of claims 3, 5-8, and 10 in part (2)

As claims 3, 5-8, and 10 depend from claim 1, these claims are patentable for at least the reasons given above with respect to independent claim 1.

Rejections of claims 11, 25, 26, 30-32, and 36 in part (3)

With regard to claim 11, as this claim depends from independent claim 1, claim 11 is patentable for at least the reasons given above with respect to independent claim 1.

With regard to independent claim 25, Applicants have amended claim 25 to recite in part "at least one surface of the at least two surfaces is adapted for thermal aberration compensation to compensate for aberration induced by a unidirectional thermal gradient" (emphasis added), as supported, e.g., at paragraph [0050]. The Examiner cites Langhans for thermal aberration compensation.

However, Langhans states the following:

> All devices encounter problems associated with "thermal lensing" of the Nd:YAG rod and the "initial pulse characteristics" associated therewith. Pumping with a flash lamp and water cooling produces a ***radial temperature profile*** in the Nd:YAG rod, which is transformed by the characteristic material constant dn/dT into a refractive index profile and thereby into a lensing effect.

Langhans, col. 1, lines 23-29 (emphasis added). In Langhans, "[t]he laser rod is curved in a convex manner on one end in order to achieve a refractive effect" (Abstract of Langhans), and it is believed that the convex curvature is to counteract a radial temperature profile as indicated at col. 2, lines 23-29 of Langhans.

By contrast, amended claim 25 recites in part "at least one surface of the at least two surfaces is adapted for thermal aberration compensation to compensate for aberration induced by a unidirectional thermal gradient" (emphasis added), and therefore amended claim 25 is patentable over Langhans. As claims 26, 30-32, and 36 depend from independent claim 25, these claims are patentable for at least the reasons given with respect to independent claim 25.

It is also noted that the Examiner indicates that Chesler et al. (U.S. Patent No. 3,680,000), Angeley (U.S. Patent No. 6,282,223), and Knights (U.S. Patent App. No. 2002/0122455) are also pertinent to Applicants' disclosure. Applicants respectfully submit that Chesler and Angeley, like Langhans, describe radial symmetric thermal lens compensation. Neither Chesler nor Angeley therefore discloses "at least one surface of the at least two surfaces is adapted for thermal aberration compensation to compensate for aberration induced by a unidirectional thermal gradient" as recited in independent claim 25.

In Knights, the "porro" end face is not used as a retroreflecting mirror where the knife edge splits the transverse mode in the middle, thereby inverting the mode to compensate for any thermal aberrations. The "porro" end face is used strictly as two sequential 45 degree mirrors. Therefore, Knights does not disclose "at least one surface of

the at least two surfaces is adapted for thermal aberration compensation to compensate for aberration induced by a unidirectional thermal gradient" as recited in independent claim 25.

New Claims 39-41

New claim 39 is supported, e.g., by paragraph [0037] and new claim 40 is supported, e.g., by originally filed claim 9. New claim 39 recites "The solid-state laser as in claim 1, where the laser gain medium is ***crystalline***" (emphasis added). By contrast, Ashby states the following:

> Our fabrication method involves the use of a doped ***spun-on matrix (spin-On-glass or polymer)*** for the solid-state optical gain medium to monolithically integrate solid state lasers or waveguides with optical gain and their diode pump lasers on the same semiconductor substrate. The concept of doping a matrix with a suitable dopant to produce optical gain is a fundamental concept of our invention.

Ashby, col. 2, lines 5-11 (emphasis added). See also: "The use of a ***spin-on-glass or polymer laser medium*** to monolithically integrate the solid state laser and its diode pump laser on the same semiconductor wafer represents a new approach to diode-laser pumped solid-state lasers." Ashby, col. 2, lines 26-29 (emphasis added). Further, Ashby specifically distinguishes its invention from YAG solid state lasers at col. 2, lines 40-46. An exemplary embodiment herein claims a solid state laser including a laser gain medium made of Nd:YAG as one a number of possibilities; see dependent claim 9.

As neither a spin-on glass medium nor a polymer medium is crystalline, Ashby does not anticipate newly added claim 39. Therefore, dependent claim 39 is patentable over Ashby, as is dependent claim 40, which depends from dependent claim 39.

New claim 41 recites "The solid state laser as in claim 1, further comprising a block having a recess for receiving the freestanding laser resonator composite structure, wherein the freestanding laser resonator composite structure resides within the recess." New claim 41 is supported, e.g., by paragraphs [0034] and [0045].

Conclusion

Based on the foregoing arguments, it should be apparent that claims 1-13, 25-34, and 36-41 are thus allowable over the reference(s) cited by the Examiner, and the Examiner is respectfully requested to reconsider and remove the rejections.

Respectfully submitted:

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